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14. ABSTRACT

One purpose of the study is to evaluate the effects of hippotherapy on motor performance in individuals with disabilities. Fifty veterans will be recruited and receive traditional physical therapy and physical therapy including hippotherapy. Measures will be taken after each session and analyzed.

15. SUBJECT TERMS nothing listed

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INTRODUCTION

1) One purpose of the study is to evaluate the effects of hippotherapy on motor performance in individuals with disabilities. Fifty veterans will be recruited and receive traditional physical therapy and physical therapy including hippotherapy. Measures will be taken after each session and analyzed.

2) This study will also evaluate the impact of the Beck PRIDE Center on health and well being and quality of life.

3) It will document veteran completion of referrals and engagement with care across six domain areas.

4) It will develop a program implementation manual that can be distributed to other educational institutions.

The significance of these areas of investigation will further the model for civilian institutions to engage combat veterans with disabilities and their families on reintegration post employment.

BODY

The Beck PRIDE Center at Arkansas State University was founded to assist combat wounded veterans with personal rehabilitation, individual development, and education in a University setting. As part of the overall grant, we are evaluating the impact of the Center on veterans' health and well-being, and quality of life (referred to in this report as the "research project"). Specific services provided by the Beck PRIDE Center include the following:

- counseling (e.g., mental health counseling, rehabilitation counseling),
- combat group support,
- psychoeduational groups,
- workshops,
- physical rehabilitation,
- career development,
- resources and assistance for higher education,
- financial assistance,
- advocacy,
- assistance with disability claims, and
- support to achieve their post military service goals.

As of September 3, 2014, 125 participants were enrolled in the research project at the Beck PRIDE Center, an increase of 39 since the last annual report. Over the past year, each participant has completed the SF-12 survey (a series of 12 questions measuring the participant's perceived functional health and well-being); the Beck PRIDE Satisfaction Inventory (BPSI) which measures satisfaction in different life domains and Beck PRIDE services; and the Quality of Life Index (QLI) which measures satisfaction with, and the importance of, different areas of life. Further, we have continued to monitor data gathered at intake and at follow-up visits, including participant demographics, education, and current treatment.

The remainder of this report is organized into 4 main sections based on data source: (1) SF-12 Health Score Summaries, (2) Beck PRIDE Satisfaction Inventory Summary, (3) Quality of Life Index Summary, and (4) Summary of additional Intake and Follow-up data. These brief summaries present a picture of how the Beck PRIDE Center research project is progressing.

SF-12 HEALTH SCORE SUMMARIES

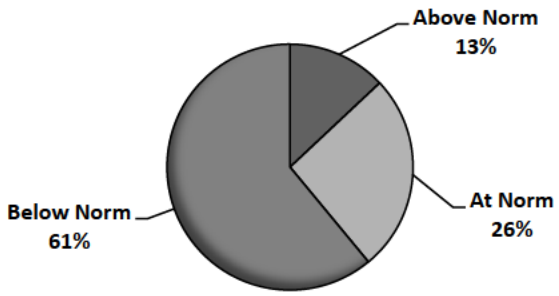
All 125 Beck PRIDE Center participants completed an SF-12 when they first enrolled in the study, and a 6-month follow-up survey has been completed by 35 of those participants (8 participants have completed a 2nd 6-month follow-up and 1 participant has completed three 6-

month follow-ups). The possible score range for the SF-12 is 20-80, with 50 being considered the population norm. Overall, it appears that when compared with the general population, Beck PRIDE participants exhibit more physical- and mental-health problems. However, when looking at pre- and post-survey data from those participants who have completed the SF-12 a second time, those problems seem to be lessening (however, no statistically significant effects were found, largely because of low power with only 35 participants). Below is a breakdown of the physical-, mental-, and overall-health of the participants based on the data gathered thus far. We will continue to collect SF-12 data from the participants throughout the project. An extensive effort to contact veterans for follow-up and to check on overall wellbeing has been implemented.

SF-12 Physical Health

Overall, upon entering the Beck PRIDE Center, self-reports indicate that few participants fare better than the general population in Physical Health (only 13% scored above the general population norm of 50). One-quarter of participants scored about average in the physical health component of the SF-12, but about two-thirds (61%) of the participants' scores indicated that their level of perceived physical health (e.g., physical functioning, bodily pain) is worse than individuals in the general population. The figure below (Figure 1) depicts the percentage of the research participants who are above, at, or below the general population norm in the physical health component of the SF-12.

Figure 1:
Beck PRIDE Participant Physical Health Scores Compared to the General Population Norm
(N=125)

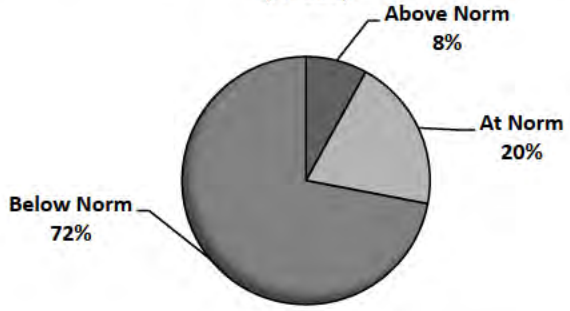


SF-12 Mental Health

Similar to physical health, it appears that only a few Beck PRIDE participants fared better in self-reported mental health than the general population upon entering the program (8% were above the general population norm of 50). Nearly three-quarters (72%) of the participants scored below the general population norm, indicating that mental health is a problem area. The figure

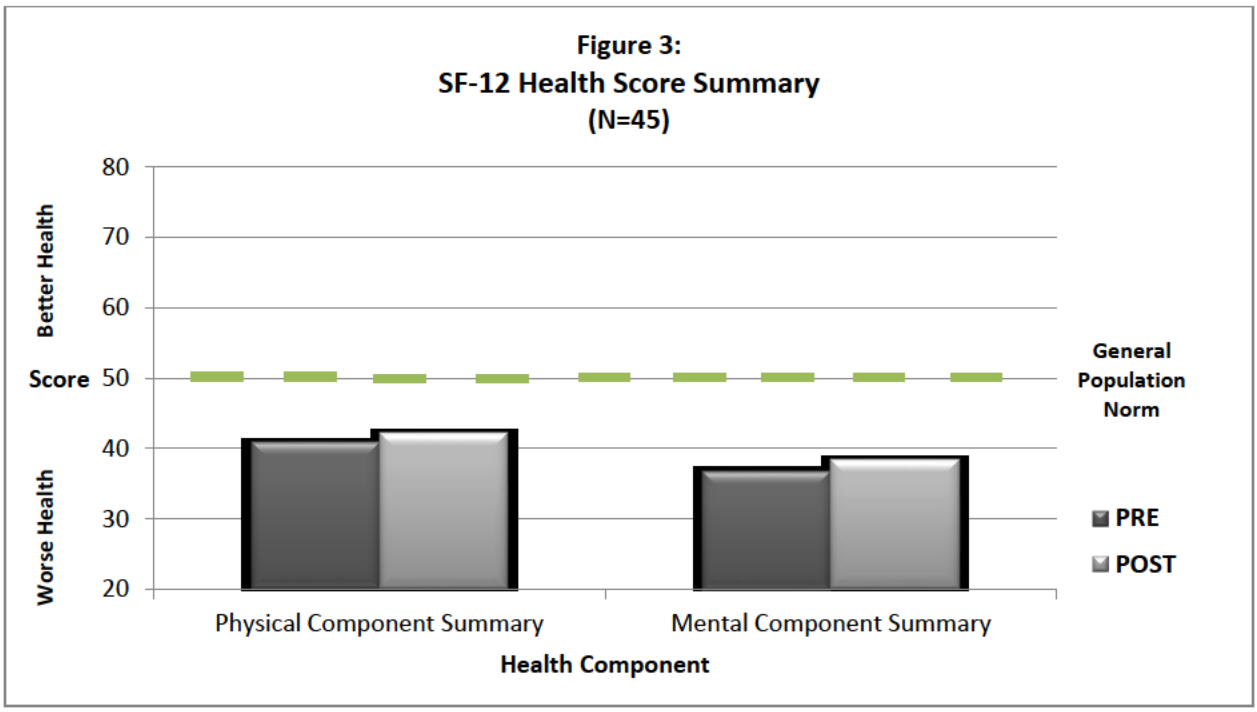
below (Figure 2) depicts the percentage of Beck PRIDE research participants who are above-, or at-, below-the general population norm based on the mental health component of the SF-12.

Figure 2:
Beck PRIDE Participant Mental Health Scores Compared to the General Population Norm
(N=125)



SF-12 Overall Health

As mentioned above, both pre- and post-survey data have been collected from 35 participants. Those data indicate that although Beck PRIDE participants' SF-12 scores still fall below the general population scores in both physical- and mental-health, participants appear to be making gains in both areas as they participate in the Beck PRIDE Center. The figure below (Figure 3) shows participant self-reported physical- and mental-health status at both pre- and post-testing for those 35 participants (the total of 45 SF-12 surveys includes the 2nd and 3rd follow-ups from the same participants). We will continue to conduct follow-up assessments using the SF-12 to monitor Beck PRIDE participant health.



BECK PRIDE SATISFACTION INVENTORY SUMMARY

The Beck PRIDE Satisfaction Inventory (BPSI) has been completed by each of the 125 Beck PRIDE participants. The BPSI measures the general satisfaction and quality of life of the veterans. With the BPSI, participants are asked to rate their satisfaction with the following eight domains of their lives: (1) Education, (2) Career Prospects, (3) Social Life, (4) Family Life, (5) Health, (6) Physical Activity, (7) Recreational Activity, and (8) Work Life.

Generally, when participants come to the Beck PRIDE Center, their overall quality of life score (based on the BPSI) is rather low, with an aggregated mean across participants of 2.4 on a scale from 1 to 4 (with 4 being a great deal of satisfaction). As with the SF-12, we have received follow-up BPSI data on 35 participants. However, as with the SF-12, 35 participants are not sufficient for a proper pre-post survey analysis; therefore, no pre-post statistical analyses have been conducted at this time. Pre- and post-BPSI means by domain are reported in Table 1 below. Overall, the majority of participants appear to have at least *a little* satisfaction with their lives, but there are quite a few who experience *no satisfaction*. The pre-survey means (below) across domains for the 35 follow-up participants parallel the means for the total group. As with the SF-12, we will continue to collect BPSI data from the research participants as they come in and at the time of follow-up.

Table 1. BPSI Item Means: Pre- and Post-Assessment (N=35)

How much satisfaction do you get from…	Mean Responses	
	Pre-Survey	*Post-Survey*
Education life	2.5	2.6
Career prospects	2.4	2.5
Social life	2.2	2.6
Family life	2.8	3.0
Health	2.5	2.5
Physical activity	2.5	2.3
Recreational activities	2.3	2.5
Work life*	1.8	2.0
OVERALL SCORE	2.4	2.5

*One veteran did not respond to the question about the Work Life domain.

QUALITY OF LIFE INDEX SUMMARY

Each veteran participating in the Beck PRIDE study has completed the Quality of Life Index (QLI) Generic III Version during the initial intake interview. The QLI assesses quality of life by measuring the general satisfaction with and perceived value of different areas of life. Questions are rated on a scale from 1 to 6 (with 6 being "very satisfied" or "very important"). Five scores are calculated for the QLI: (1) Overall Quality of Life score, (2) Health and functioning subscale score, (3) Social and economic subscale score, (4) Psychological/spiritual subscale score, and (5) Family subscale score. Subscales are scored from 0 to 30 (with 30 reflecting higher quality of life). Table 2 below shows the five quality of life subscale scores for veterans participating in the study; the highest and lowest mean scores are highlighted. Complete data are only available for 117 participants.

The results from the QLI show that, at intake, veterans in the study report a relatively low quality of life overall. However, of the different areas of life, participants on average rate family life as the most satisfying/important (mean score of 20.1 on the family subscale). In contrast, participants report their health as the least satisfying/important area (mean score 15.7 on the health and functioning subscale). The family subscale consists of items such as family health, family happiness, emotional support from family, etc. The health and functioning subscale consists of items such as health care, energy (fatigue), worries, etc. The higher score on the family subscale may be related to many veterans reporting a spouse or parent as a support system. The lower health and functioning subscale score may be related to the fact that most veterans participating in the study report varied medical or physical issues. The other subscale scores are virtually equal on average among participants, displaying a more intermediate quality of life.

Table 2. QLI Subscale Scores at Intake (N=117*)

Scale	Minimum	Maximum	Mean
Overall Quality of Life	2.73	30	17.2
Health and Functioning	1.85	30	15.7
Social and Economic	3.0	30	17.3
Psychological/Spiritual	0.0	30	17.3
Family	3.0	30	20.1
*N varies from 118 to 119 participants between subscales due to incomplete responses.			

SUMMARY OF ADDITIONAL INTAKE & FOLLOW-UP DATA

Below is a summary of 6 key areas assessed during the intake process for the Beck PRIDE Center. The key areas are (1) Demographics, (2) Education, (3) Deployment, (4) Medical or Physical Issues, (5) Current Treatment/Resources, and (6) Community Support/Outreach. As with the three assessments discussed above, we have intake data on all 125 participants, but do not have enough follow-up data to make any meaningful conclusions at this point. Below, we provide a brief description of the data received to date from intake.

Demographics: The majority of the Beck PRIDE participants are male (95%) and Caucasian (76%). The first female participant entered the study in July 2012. Since then, 5 more females have entered the study. Currently, participants' birth years range from 1944 to 1992, which means that the age range is approximately 21 to 70 years. The mean age of veterans in the research project is 34 years old. Reports of marital status show that around half are married (54%), about one-quarter are single (26%), and 11% are divorced. Fifty-five percent of participants have been married once, 31% report never being married, and 12% have married twice.

Education: Many of the veterans who come to the Beck PRIDE Center request assistance for their education needs. Out of the participants who responded to the education items on the intake, 52% report needing educational advising, 20% need testing/placement/assessment assistance, and 18% need tutoring/mentoring/study skills assistance. In addition, thirty-seven percent of participants report needing Vocational Rehab assistance, 36% request GI Bill benefit assistance, and 32% need scholarship/other financial aid assistance. Veterans receive assistance with registering for disability services on campus, completing paperwork for educational assistance, course substitution on a case by case basis, and priority registration. The Beck PRIDE Center staff advocate for the veterans if difficulty arises in a course and arranges tutoring as necessary.

Deployment: In order to receive services from the Beck PRIDE Center, veterans must have fought in a present day conflict (from Persian Gulf to present). Roughly half of the Beck PRIDE participants have been deployed one time (56%), while about a third of participants report being deployed twice (33%). Iraq and Afghanistan are the two most common deployment locations among the participants (66% and 38%, respectively). Information and referrals are completed on older combat veterans.

Medical or Physical Issues: A majority of the medical and physical issues participants report when coming to the Beck PRIDE Center appear to be a result of their combat-related experiences and exposure to a warzone environment. Of the participants who responded to the impairment items on the intake form, 78% reported suffering from mobility impairments (e.g., back, knee, or shoulder pain), 77% reported suffering from sleep problems (e.g. sleep apnea or insomnia), and 69% reported hearing impairments (i.e., hearing loss or tinnitus). Other major issues with returning veterans are Post-Traumatic Stress Disorder (PTSD) and Traumatic Brain Injury (TBI); about two-thirds of participants reported having PTSD (62%) and about a third reported having TBI (30%).

Current Treatment/Resources: As stated earlier in the report, 52% of the veterans come to the Beck PRIDE Center requesting education advising assistance. The center staff works closely with the Vocational Rehab staff in Ft. Roots. Many veterans also come to the Beck PRIDE Center requesting assistance with their Veteran's Affairs claims or disabilities; 48% of the veterans requested assistance for VA Benefits Disability Determination and 37% requested assistance for VA Benefits Enrollment. About a third of participants requested outpatient mental health counseling (30%), 21% requested individual mental health counseling, and 11% requested support group mental health counseling. A combat support group meets weekly with a licensed therapist from the Memphis VA center. Individual counseling is arranged and supported for the veteran and family members. Psychoeduational groups were offered for the spring of 2014 on topics of anger management and marriage enhancement. A workshop on finances and education information was held for veterans and their families in the spring.

Community Support/Outreach: Anecdotally, a large percentage of the veterans who enter the Beck PRIDE Center appear to be socially withdrawn during the initial intake visit, and, in fact, their social life scores on the BPSI tend to be among the lowest across the domains. The Beck PRIDE Center has a strong desire to assist veterans with socialization and provides opportunities for veterans to take part in various social settings. R&R days allow veterans to gather at the Beck PRIDE Center to eat lunch and socialize with fellow veterans, volunteers, and community members. In the current Beck PRIDE research population, 81% of the participants say they do not belong to any community veteran organization upon entering the program but are strongly encouraged to investigate some of the local community groups.
The Beck PRIDE Center also encourages the veterans to be a part of community organizations (e.g. DAV, VFW, Wounded Warrior, ASVO) in which they have the opportunity to connect with

other service members and begin feeling involved in society again after being discharged from the military. These organizations also provide support for the veterans and encourage them to socialize outside of the center, have assisted with transportation needs for appointments, have volunteered to help locate resources, supplies, and other needs of the veterans. The organizations have helped sponsor and participate in a summer picnic for Beck PRIDE participants and their families and a holiday program. The Student Veterans Association provides a tailgate for the home football games and the center is able to access football tickets for family members to encourage them to participate in activities.
Presentations are made to numerous groups within the community to encourage understanding and support for the veterans and to identify veterans that need to be referred to the center. Beck PRIDE Center staff has participated in community outreach programs including continuing educational presentations for social workers and counselors regarding Post Traumatic Stress Disorder.

NEXT STEPS

As reflected above, when participants come to the Beck PRIDE Center, they may have physical or mental issues, they are not totally satisfied with their lives, and they are in need of various types of assistance. It appears that the Beck PRIDE Center is a mechanism to raise those satisfaction levels and provide assistance. Beck PRIDE Center staff will continue to monitor participant progress in the key areas identified in this report by collecting baseline and follow-up data on the SF-12, the BPSI, and follow-up forms. The project's staff will continue working on additional mechanisms by which those data can be obtained more easily and more reliably and have shown gains by calling veterans individually and checking on their welfare. For the Fall, 2014 semester workshops will be offered on VA home financing, an eight week group for veterans (Going Forward) is being offered weekly at two times, evening and afternoon to cover topics including: setting goals, personal growth, personal relationships, mental health, Grief & Guilt, and Substance Abuse. Plans have been completed for a workshop for clergy and mental health professionals on the topic of moral injury, PTSD, and suicide for October 29, 2014 as a part of the VA/Clergy Partnership for Rural Veterans with an evaluation tool. Our goal is to continue monitoring gains and to provide data to evaluate the impact of those gains.

HIPPOTHERAPY

Forty three of the fifty proposed subjects have participated in this study to date. Subjects are veterans referred through Arkansas State University's Beck PRIDE Center. These veterans vary in medical diagnoses including low back pain, lower extremity pain, upper extremity pain, and neck pain. After signing an informed consent document, the participants were examined by a licensed physical therapist at the Reynolds center on the ASU campus to determine if he/she could participate in the study. The qualified participants were then randomly assigned to either Treatment Group A or Treatment Group B via a coin flip. Treatment Group A is participating in both hippotherapy and traditional therapy, for one hour once a week; Treatment Group B is participating in traditional physical therapy, twice a week for one hour. Each participant will remain at that treatment schedule for 15 weeks. After 15 weeks the participant will switch

treatment schedules. Therefore, in weeks 16-30, Group A will receive physical therapy twice a week and Group B receives hippotherapy. The study will last for a total of 30 weeks for each participate. Measurements were taken on all participants following each session. The results will be analyzed and compared to see if they are similar or different. This study is still in progress. No participant has received all sixty treatments in the study to date. However participants have received treatments in both Group A and Group B. Participates have had a variety of reasons for missing sessions including: vacation, illness of family members or self, school or work conflicts, other appointments and a variety of other issues. To address this issue additional hours and weekend appointments have been made available for the participants. All participants have been seen when available and data continues to be collected. All participants have reported some pain or lack of functional ability with sessions, therefore pain and functional scales have been used after each session and data has been recorded for analyses. Treatments indicate that participants receiving hippotherapy are showing an increase in function and decrease in discomfort at a faster rate than those receiving traditional physical therapy.

KEY RESEARCH ACCOMPLISHMENTS

Tasks Accomplished
Objective 1 & 2

SOW- Task 1: *IRB expedited review.* Completed.

SOW-Task 2: *Establish data collection and data entry systems.* This task was developed pre-implementation of the research project. The measures used to track the progress of research participants are administered to them at the time of their intake. The research assistant makes a copy of all the necessary research items from the original file and creates a research file for each participant. These files are stored behind two locks in the Director's office. With each file, the intake information of each participant as well as the three survey instruments are entered into an Excel spreadsheet and then copied into a statistical package (SPSS) ensuring accuracy.

SOW-Task 3: *Recruit Staff.* Lynda Nash is the Project Director, Kelly McCoy is the Project Manager, and Cory Lawson is the Research Assistant on the project. A second research assistant, Charles Carter, was hired in the summer of 2014 and he was cross-trained to work with both the research database and manual production.

SOW Task 4: *Enrolling new cohort.* Since the first research participant was enrolled on January 12, 2012, the enrollment process has been continuous with the current enrollment standing at 125 participants. Although some months have been slower than others, we are still averaging five to six new participants a month. The task of enrolling a new cohort is steady and continuous.

SOW Task 5: *Collect data pre/post.* The task of collecting pre and post data on each veteran is with hopes of following their improvement longitudinally. Pre data on the other hand, is collected before the veteran receives any of Beck PRIDE's services at their initial intake visit. Follow-up surveys have been completed by 45 participants to measure individual progress.

SOW Task 6: *Analyze Data.* The process of analyzing data takes place frequently. When quarterly reports are submitted, data is analyzed and the demographics, services needed, etc., are identified. Through the process of analyzing the data, the Beck PRIDE Center has been able to look at what veterans need whenever they come for assistance. With that knowledge, the staff is able to see where the need is the greatest for veterans.

SOW Task 7: *Report Data.* Data has been reported to the Department of Defense every three months since the research project has begun. The findings of the data analyzed in the Beck PRIDE office have been reported quarterly and now with this third annual report. Beck PRIDE's research assistant on the project has filtered what data is significant to include in each report and what is acceptable to be omitted. Anomalies and major areas of similarities, as well as grave needs have been included in the previous reports. These concepts will continue to be reported in future reports.

SOW Task 8: *Follow existing cohort.* A system is in place to follow the existing cohort of the project. The research assistant contacts participants who have reached or need to come in for a 6-month visit. The three survey instruments administered at the intake are also administered at each follow-up appointment at 6-months since their last visit. Participants are encouraged to check in with Beck PRIDE from time to time in addition to their 6-month follow up appointments. The follow-up process has been in place and data is currently being collected.

SOW Task 9: *Collect discharge data.* As previously mentioned, no discharge data have been collected, analyzed, or reported. At this time, no research participants have met requirements to be discharged, met goals, or voluntarily quit the research project.

SOW Task 10: *Analyze discharge data.* Not applicable.

SOW Task 11: *Report discharge data.* Not applicable.

Objective 3:

SOW Task 1: *Order hippo equipment.* Completed.

SOW Task 2: *Install equipment.* Completed.

SOW Task 3: *Recruit subjects.* Ongoing (43 of 50 recruited).

SOW Task 4: *Initiate hippo research.* Ongoing.

SOW Task 5: *Collect data.* Ongoing.

SOW Task 6: *Analysis & Report.* Early review of limited data. Some discussion was included in the "Body" of the document.

Objective 4:

SOW Task 1: *Development of the draft manual.* As discussed in the October 2012 annual report, a meeting of the research group was held to discuss the design of the implementation manual. Dr. JoAnn Kirchner, a consultant on the project, also attended and worked with the research group on the development of an outline of the creation of the Beck PRIDE Center. A timeline of

the creation process was developed following the meeting and distributed to the research group. A second meeting of the research group with both Mark Reeves and Mary Williams from ASU Publications and Creative Services in attendance. The design for the implementation manual was decided upon and group members were assigned tasks for compilation of the content information. A third meeting between Mark Reeves, Sandra Worlow, and Dr. Hanrahan occurred just prior to the October 2012 annual report, and refinement of draft one content was discussed. An early draft was reviewed in late October by the Beck PRIDE Center National Advisory Committee. The design and content areas were reviewed, and several of the committee members offered suggestions which were incorporated in the manual design.

SOW Task 2: *Send out for review and modification.* During the second year of the project, the implementation manual has been sent out to a much larger group for review. Suggestions have been taken into account and incorporated into the current edition of the manual. A final draft was disseminated to the edit team. The manual is complete with the exception of the DVD which will be included with the manual.

SOW Task 3: *Disseminate manual.* Will be disseminated when DVD is complete.

REPORTABLE OUTCOMES

CONCLUSION

The project has continued to move at a slow but steady pace. There have been no issues with equipment purchases, participant recruitment, software utilization or data collection to date. To ensure better compliance with hippotherapy clients, schedules have been modified. The manual is about ready for distribution.

Progress has been timely as noted on the SOW.

REFERENCES

APPENDICES